WHAT IS CLAIMED IS:

1. A packet data communications network comprising:

a first network segment having a plurality of stations, one of said stations sending a message packet onto said first network segment of a first format; said first format including a first header and a data field with network destination address in said communications network;

a first network transfer device having an input connected to said first network segment to receive said message packet and having an output; the first network transfer device applying a second header to said message packet, said second header including a switching address translated from said destination address and including local status information;

a switching device having a plurality of ports, a first of said ports being connected to said output of said first network transfer device; the switching device receiving said message packet with said second header and sending said message packet with said second header to a second port as selected by said switching address, and in response to said local status information;

a second network transfer device having an input connected to said second of said ports of said switching device and having an output connected to a second network segment, the second network transfer device receiving said message packet via said switching device to forward to said second network segment; the second network transfer device removing said second header from said message packet.

2. A network according to claim 1 wherein said network has a plurality of links, and each of said links is assigned a link number, and said second header

3 includes a link number for a source of said message packet and a link number for a
4 destination of said message packet.

1   3. A network according to claim 1 wherein said destination address contains
2 N bits, and said switch address contains M bits, where N and M are integers and N
3 $>>$ M.

1   4. A network according to claim 3 wherein said packet includes a network
2 source address of N bits, and said added header contains a source switch address of
3 M bits translated from said network source address.

1   5. A network according to claim 4 wherein said switching device is a crossbar
2 switch.

1   6. A network according to claim 5 wherein said first network segment is a
2 serial FDDI link, and said ports are parallel ports.

1   7. A network according to claim 6 wherein said added header contains a
2 service class field, and said switching device processes said packet in response to said
3 service class field.

1   8. A network according to claim 7 wherein said added header contains a
2 protocol class field, and said switching device processes said packet in response to
3 said protocol class field.

1   9. A network according to claim 8 wherein said added header contains a status

2   field indicating local congestion, and said switching device processes said packet in

3   response to said status field.

1   10. A method of operating a packet data communications network, the

2   network including a first network segment having a plurality of stations and a second

3   network segment having a plurality of stations, and including a switching device

4   interconnecting said first and second segments, comprising the steps of:

5   sending from one of said stations of said first network segment a

6   message packet of a first format onto said first network segment; said first format

7   including a first header and a data field with a network destination address in said

8   communications network;

9   receiving said message packet at a first network transfer device having

10   an input connected to said first network segment; the first network transfer device

11   applying a second header to said message packet, said second header including a

12   switching address translated from said destination address and including local status

13   information;

14   receiving at said switching device said message packet with said second

15   header and sending said message packet with said second header to a port of said

16   switching device as selected by said switching address, and in response to said local

17   status information;

18   receiving said message packet at said second network transfer device

19   via said switching device and forwarding said message packet to said second network

20   segment; the second network transfer device removing said second header from said

21   message packet.

1   11. A method according to claim 10 wherein said network has a plurality of

2   links, and each of said links is assigned a link number, and inserting in said second

3   header a link number for a source of said message packet and a link number for a

4   destination of said message packet.

1   12. A method according to claim 10 wherein said destination address contains

2   N bits, and said switch address contains M bits, where N and M are integers and N

3    $>> M$.

1   13. A method according to claim 12 wherein said packet includes a network

2   source address of N bits, and inserting in said added header a source switch address

3   of M bits translated from said network source address.

1   14. A method according to claim 13 wherein said switching device is a

2   crossbar switch.

1   15. A method according to claim 14 including transmitting on said first

2   network segment by the serial FDDI method, and ports between said switching device

3   and said transfer devices are parallel ports.

1   16. A method according to claim 15 including inserting in said added header

2   a service class field, and said switching device processes said packet in response to

3   said service class field.

1   17. A method according to claim 16 including inserting in said added header

2   a protocol class field, and said switching device processes said packet in response to

3   said protocol class field.

1   18. A method according to claim 17 including inserting in said added header

2   a status field indicating local congestion, and said switching device processes said

3   packet in response to said status field.